ABSTRACT

NOERHAYATI ROFIAH. The Model of Physical Exercise Effect on the Dynamics of Glucose and Insulin. Under direction of AGUS KARTONO and IRMANSYAH.

Regular physical activity is indicated either to prevent or delay the onset of non-insulin-dependent diabetes or to assure a good control of diabetes by increasing insulin sensitivity and ameliorating the metabolism of glucose disappearance. A minimal model developed previously was extended to include the major effects of exercise on plasma glucose and insulin levels. Minimal model of glucose and insulin dynamics created in this study is valid. Result of model simulation is good agreement with experimental data. On the normal subject, physical exercise can reduce blood glucose levels, the same thing happened in people with diabetes. In general, the model can be explained that physical exercise can lower glucose levels basal while after the exercise, but will eventually rise returned to initial basal glucose levels, so to keep the blood glucose remained normal should be done exercise regularly and with the assistance of insulin therapy appropriate to the needs of patients.

Keywords: physical exercise, glucose, insulin, minimal model, diabetes